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ILLINOIS COMMERCE COMMISSION

Illinois Bell Telephone Company	)	
	)	
Proposed Implementation of High	)	Docket No. 00-0393
Frequency Portion of Loop (HFPL)/Line	)	
Sharing Service	)	

REPLY TESTIMONY OF DANNY WATSON ON BEHALF OF RHYTHMS LINK, INC.

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REPLY TESTIMONY OF DANNY WATSON
ON BEHALF OF RHYTHMS LINKS, INC.
DOCKET 00-0393

I. INTRODUCTION

1. Q. PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.

A. My name is Danny Watson. I am currently Collocation Manager with Rhythms Links, Inc. ("Rhythms"). My business address is 999 Liquid Amber Lane, Sonoma, California 95476.

2. Q. PLEASE DESCRIBE YOUR RELEVANT WORK EXPERIENCE.

A. I have been employed in construction and engineering related positions in the telecommunications industry since 1973. I am currently employed as Collocation Manager at Rhythms, and prior to that, I worked in various positions with Pacific Bell for over 25 years.

I began my career at Pacific Telephone and Telegraph in 1973, working primarily in Outside Plant ("OSP") Construction and Cable Maintenance for nineteen years. I then moved to an OSP Engineering position with Pacific Bell in 1992, and then in 1998 I took on a Pacific staff position in Statewide Construction and Engineering. I retired from Pacific after 27 years technical experience, and accepted my current management position with Rhythms.

I have worked in both metropolitan and rural territories, and my OSP field experience is quite broad. My OSP engineering experience includes all the core elements of the Design Engineer, the Route Manager, and the Loop Electronics

Coordinator responsibilities. My C&E staff position with Pacific included Methods and Procedures for ADSL, and xDSL for both Pacific Bell and Nevada Bell, as well as responsibilities for C&E in inter-departmental and inter-company venues.

3. Q. HAVE YOU PREVIOUSLY FILED TESTIMONY IN THIS PROCEEDING?

A. No. However, other technical witnesses for Rhythms have filed testimony in this proceeding. My understanding is that the previously filed testimony in this proceeding is still included in this Rehearing. Based on this understanding, I have not repeated the testimony as provided by Rhythms' witness Mr. Riolo, including his direct testimony, his testimony adopting the testimony of Mr. Zulevic, and his surrebuttal testimony.

4. Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I will address some of the technical issues related to line sharing over SBC-Ameritech's Project Pronto architecture, including unbundled access to this architecture, line card collocation and Asynchronous Transfer Mode ("ATM") issues. In addressing these areas, I will also be addressing the non-legal aspects of issues 2, 3, and 6 on Commissioner Squires' rehearing issues list. My counsel informs me that certain portions of Commissioner Squires' questions involve legal issues, not factual issues and therefore will be addressed in the post-hearing brief to be filed in this case.

II. UNBUNDLED ACCESS TO LINE SHARING OVER THE FIBER-FED DLC LOOP NETWORK ARCHITECTURE.

5. Q. IS THERE ANY BASIS FOR SBC-AMERITECH'S CLAIMS THAT IT IS NOT TECHNICALLY FEASIBLE TO UNBUNDLE PROJECT PRONTO?

A. No. Although there is no need to repeat the unrebutted testimony Rhythms already presented in this case, I do wish to include some new information for the Commission to consider.

SBC initially planned to offer Project Pronto as UNEs. When SBC first asked the FCC for a waiver from its Merger Conditions that would allow SBC to own the line cards in the NGDLC and the OCD, SBC provided a sample appendix for Project Pronto to be added to CLEC interconnection agreements. In that appendix, SBC stated that it would offer Project Pronto components as UNEs.[1] As is evident from the testimony this proceeding, SBC has since retracted its offer to provide Project Pronto as UNEs, claiming it is not technically feasible to do so. However, SBC's own technical documents disprove the ILECs technical infeasibility claims. On March 16, 2000, SBC published Version **BEGIN CONFIDENTIAL**********
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[1] Letter from Paul K. Mancini, SBC Vice-President and Assistant General Counsel, to Lawrence Strickling, Common Carrier Bureau Chief, February 18, 1999.

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**********END CONFIDENTIAL.[2]

Moreover, SBC has also acknowledged its obligation to unbundle its Project Pronto architecture.[3] The above document states **BEGIN CONFIDENTIAL**********

**********END CONFIDENTIAL.[4]

6. Q. CAN VOICE AND DATA CAN BE CARRIED ON A SINGLE FACILITY IN THE PROJECT PRONTO CONFIGURATION?

A. Yes. Contrary to SBC-Ameritech's assertions, it is technically feasible to carry both voice and data on a single fiber. I understand that in the Texas Line Sharing Proceeding, SWBT witness Mr. Lube admitted it is technically feasible to "fiber share" voice and xDSL traffic on the same fiber in the Project Pronto architecture.[5] Specifically, Mr. Lube acknowledged that the Alcatel NGDLCs being deployed throughout the SBC territory under Project Pronto—the Litespan 2000 and the Litespan 2012—can be configured to carry xDSL traffic and voice

[2] Rhythms Texas Exh. 65A, (030306 to 030327), at Bates 030310.
[3] Rhythms Texas Exh. 65A, (030306 to 030327), at Bates 030310.
[4] Rhythms Texas Exh. 65A, (030306 to 030327), at Bates 030310.
[5] SWBT Texas Exh. 11A (Lube), at 12:18-25.

traffic on the same fibers.[6] Further, SBC initially specified in its Project Pronto RFPthat**BEGINCONFIDENTIAL**********
**********END CONFIDENTIAL.**[7] Moreover, SBC has acknowledged that the base configuration of the AFC UMC1000 carries both voice and data traffic on the same fibers.[8] The document states**BEGINCONFIDENTIAL.**********
**********END CONFIDENTIAL.**[9]

Thus, it is clear that voice signals and xDSL signals of all types, including ADSL ATM bitstreams, can be multiplexed and carried on a common fiber through multiplexing. The fact that SBC chose to configure Project Pronto with voice and data traffic carried on separate fibers does not determine whether it is technically feasible to carry both on the same fiber. It should be noted that Rhythms *is not* asking SBC-Ameritech to reconfigure its Project Pronto architecture to actually carry both voice and data traffic on the same fibers.

7. Q. **SEVERAL SBC-AMERITECH WITNESSES REFER TO PROJECT PRONTO AS A "OVERLAY" NETWORK. DO YOU AGREE?**

A. No. From my perspective as an engineer, the term "overlay network" appears to be used for regulatory purposes more than for engineering purposes. The engineering reality is that Project Pronto is just one more in a long series of steps

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6 *Id.* at 14:1-15: 2.
7 Rhythms Texas Exh. 53A, (029889 to 030181), at Bates 031631 (Objective 4-48).
8 Texas Hearing Tr. (Lube), at 572:23-574:10.
9 Rhythms Texas Exh. 12A, (000211 to 000289), at Bates 000217.

undertaken by incumbent LECs for years to modernize their networks, including outside plant and central office facilities. The components of Project Pronto are off-the-shelf and are available to any telecommunications carrier. Fiber-fed NGDLC systems have been deployed for years by numerous ILECs. The only real difference between the Project Pronto NGDLC deployment and earlier NGDLC deployments is the addition of the ability of the system to process ATM packets. Previously, NGDLC systems were set up to support circuit switched and channelized applications through the use of the time division multiplexed ("TDM") functionality of the NGDLC.

Moreover, from the perspective of outside plant engineering, it would not make economic sense to operate two parallel loop plant networks (i.e., Project Pronto fiber-fed NGDLC and home run copper) for any significant period of time. To do so would prevent the ILEC from fully realizing the maintenance savings and lower unit cost of capacity expansion associated with the fiber-fed NGDLC loop architecture. Indeed, the ILEC's total costs would increase because of the need to maintain two loop plant networks. Thus, whether it happens this year or in the near future, SBC-Ameritech will have to use the fiber-fed DLC loop network it is deploying as the only loop network in the areas that it serves.

I am aware that as part of its commitments to the FCC in order to encourage the FCC to approve the SBC acquisition of Ameritech, SBC committed not to remove home run copper from service for a period of a few years. This is the type of regulatory purpose or rationale I refer to above, and this commitment

may in fact be the basis for SBC-Ameritech's claim that Project Pronto is an "overlay" network. Notwithstanding this temporary regulatory commitment, however, the engineering reality remains that SBC-Ameritech will need to make Project Pronto the only loop architecture as soon as it is politically and legally possible to do so, for the economic and engineering reasons I discussed above.

8. Q. SBC-AMERITECH WITNESS BOYER PROVIDES A HIGH LEVEL DESCRIPTON OF THE PROJECT PRONTO LOOP ARCHITECTURE. DO YOU AGREE WITH HIS DESCRIPTION?

A. The Project Pronto loop architecture was discussed in detail in the case below (as well as twice before in the Rhythms/Covad arbitration and rehearing with SBC-Ameritech for line sharing), and thus the Commission and the parties by now have a thorough understanding of that architecture. In general, Mr. Boyer provides an accurate high level description of the Project Pronto architecture. However, he does make several statements that I believe are inaccurate as he discusses that architecture and SBC's motivations for deploying it.

First, he asserts that the only portion of the existing network that would be used with Project Pronto is the copper subloop from the end users' premises to the SAI, and that copper feeder pairs between the SAI and the Project Pronto RT would be newly installed as part of the Project Pronto deployment. I do not believe this statement is accurate in all cases, and may not even be accurate in the majority of cases. Much of the Project Pronto rollout takes advantage of existing RT locations either for the upgrade of existing DLC equipment or the placement of new DLC equipment. In such circumstances, the existing feeder plant from the

existing RT location to the subtending SAIs can be used in whole or in part to serve the Project Pronto-fed loops.

Second, Mr. Boyer states that "the NGDLC system, including the line card, splits the voice and data signal . . . ."[10] This statement is not accurate. The splitter functionality resides only on the ADLU card. This is one way in which ADLU cards differ from other types of plug in cards such as POTS and ISDN cards.

Third, in discussing the central office-located ATM switch that SBC-Ameritech calls an OCD, Mr. Boyer states that an "OCD is a new piece of equipment being deployed by SBC for the sole purpose of providing multiple CLECs (including SBC's data affiliate) with access to the Project Pronto network architecture."[11] If this statement is accurate, it is only so on a near-term "snapshot" basis. The OCD is actually a robust, fairly high capacity ATM edge/core switch that is normally deployed by carriers as part of an ATM "cloud" (that is, a number of ATM switches interconnected by fiber transport facilities, that together constitute a packet switched network). In SBC-Ameritech territory, the OCD is a Cisco 6400 series switch; in the rest of SBC's territory, the OCD is a Lucent CBX 500 series switch. Today these ATM switches are not connected to the ATM cloud, and are therefore performing only the routing function described by Mr. Boyer (that is, directing ATM cells to and from individual CLECs who are collocated in that central office). However, this configuration is in place solely

[10] Boyer Direct, at 7.

for regulatory reasons (I am informed by counsel that SBC-Ameritech is currently precluded from connecting these ATM switches to the ATM interoffice cloud they are also constructing as part of Project Pronto). From an engineering standpoint, it is a straightforward matter to connect these ATM switches to the ATM cloud using standard fiber transport facilities. I expect that SBC-Ameritech will do so as soon as they get regulatory clearance to do so, because that approach is the obvious next step, from a network engineering perspective. Once that happens, of course, the existing, installed ATM will be transformed from a routing device to a fully functioning standard edge/core switch that is part of an ATM packet switched network. I note that if SBC-Ameritech truly wanted to install an ATM routing device solely to support CLECs, as Mr. Boyer claims, Ameritech could have installed ATM routing devices that are far cheaper than the ATM switches they are actually installing.

Finally, I disagree with Mr. Boyer's assertion that "SBC has always viewed Project Pronto as a means to expand broadband high-speed Internet access capabilities to the 'mass market ' (i.e., residential and small business customers) . . . ."[12] While residential Internet access is certainly one of the types of services that Project Pronto will support, it is by no means the only one. SBC's own internal financial planning documents created to support the Project Pronto business case make it clear that SBC was deploying Project Pronto to support additional broadband services including **BEGIN CONFIDENTIAL*****

[11] Boyer Direct, at 8.

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***END CONFIDENTIAL. Moreover, SBC recently announced "Project Pronto II" under which SBC will extend fiber to the premises for small business and selected residential customers using broadband passive optical technology. In addition, Alcatel has announced that it will build or license line cards for its Litespan system that will support HDSL2 and G.shdsl, both of which support symmetrical broadband services that go far beyond simple Internet access. Thus, Mr. Boyer's statement about Internet access for customers reflects SBC's current marketing plans for use of the Project Pronto architecture, rather than the capabilities of the architecture itself.

9. Q. DOES SBC-AMERITECH'S OFFER TO MEET WITH CLECS IN THE FUTURE TO CONSIDER DEPLOYING ADDITIONAL LINE CARDS AND SOFTWARE CAPABILITY SATISFY RHYTHMS AND REMOVE THE NEED FOR LINE CARD COLLOCATION?

A. No. My reading of SBC-Ameritech's offer is simply an offer to discuss the *possibility* of agreeing to deploy additional technology, not a commitment to deploy any type of line card supported by the NGDLC manufacturer upon request of Rhythms or any of the other CLECs. Without such a commitment, SBC-Ameritech can satisfy its obligation simply by meeting and discussing but not agreeing to deploy any new technology unless it or its data affiliate wants to use the technology. Thus, without line card collocation, CLECs cannot be assured

[12] Boyer Direct, at 9.

that they can use the Project Pronto architecture to the fullest extent that is technically possible to achieve.

10. Q. DO YOU AGREE WITH MR. BOYER'S CLAIMS OF SIGNIFICANT NEGATIVE IMPACTS ON THE CAPACITY OF PROJECT PRONTO ASSOCIATED WITH OTHER TYPES OF DSL AND/OR QUALITY OF SERVICE CLASSES OF ATM/ADSL OTHER THAN UNSPECIFIED BIT RATE?

A. No. As an engineer, I am surprised by any claim that fiber-based systems are somehow capacity constrained. Such a concept is a throw-back to legacy copper systems, which were in fact fairly difficult and expensive to augment. In contrast, fiber systems are widely known to be expandable almost without limit in a very straightforward fashion. The fiber optic cables in fiber systems offer essentially unlimited bandwidth. Increases in bandwidth can be achieved a number of well established ways, including increasing the transmission rate of the electronics at both ends of the fiber system, and, more recently, the deployment of wave division multiplexing and dense wave division multiplexing, which derive additional bandwidths on the same fiber system by using lasers that transmit and receive at multiple wavelengths of light, or lambdas, simultaneously. It is also possible to expand throughput capacity by using additional available fibers between the RT and the central office. In SBC's initial Project Pronto configuration, all three Litespan Channel Bank Assemblies are daisy chained onto a single fiber system. If capacity needs require, these Channel Bank Assemblies can be unchained, and each can be served with a separate fiber system, instantly tripling the throughput capacity. SBC-wide documents produced in the Texas line

sharing case, indicate that **BEGIN CONFIDENTIAL*** ********** ********** ********** ***END CONFIDENTIAL**. Each RT in SBC's initial Project Pronto deployment will need no more than 10 fibers (4 fibers for the TDM side, 4 fibers for the ATM side, and 2 fibers for maintenance and testing). SBC has stated that there will be an average of 16-24 RTs per central office, which equates to an average of 5 RTs per quadrant. Thus, there should be plenty of spare fiber that could be used to serve individual Channel Bank Assemblies, if needed. Therefore, if a particular fiber route from an RT to the central office begins to near the initially installed capacity, there are a variety of straightforward means to increase capacity, and the fiber route can never be said to be out of capacity.

Moreover, if demand for throughput on Project Pronto increases to the point where the modifications discussed above are required, SBC-Ameritech should view that as a happy state of affairs rather than as a problem. Under such conditions, SBC-Ameritech is receiving TELRIC-based, fully compensatory prices for all of the throughput being purchased by CLECs. Additionally, SBC-Ameritech's facilities are being used more efficiently because they have less unused capacity, and SBC's payback on its Project Pronto investment will occur sooner.

11. Q. MR. BOYER SPENDS SIX PAGES OF HIS TESTIMONY DISCUSSING WHAT HE VIEWS AS THE MERITS OF SBC-AMERITECH'S BROADBAND SERVICE OFFERING. IS THE BROADBAND SERVICE OFFERING A SUFFICIENT ALTERNATIVE TO UNBUNDLING PROJECT PRONTO?

A. No. SBC-Ameritech's offer of Broadband Service as an alternative to Project Pronto UNEs is an insufficient proposal. The Broadband Service would not provide the same level of technical features and flexibility as would Project Pronto UNEs. First, SBC-Ameritech's Broadband Service is limited to ADSL only. Rhythms currently offers other types of xDSL, both of which currently can be line shared, as Mr. Boyer acknowledges, but SBC-Ameritech does not support any type other than ADSL in a line sharing configuration over Project Pronto. Further, the Broadband Service would prevent Rhythms and other CLECs from offering the full range of line-shared xDSL capabilities, such as voice or video over xDSL, to Illinois consumers. In order to support voice or video over xDSL, carriers must have constant bit rate and variable bit rate quality of service classes over the packet switching portion of Project Pronto. SBC's own documents show that there is already customer interest in video over xDSL. For example, in a March 24, 2000 email, **BEGIN CONFIDENTIAL**********.***END CONFIDENTIAL.**[13]

Further, Rhythms will be required to purchase the Broadband Service "as is," meaning that Rhythms will be unable to add new features and functions that

SWBT chooses not to offer.[14] Thus, Rhythms would be nothing more than a reseller of xDSL service over Project Pronto if its only choice is the Broadband Service. Although I'm not a lawyer, I do not see how SBC-Ameritech can fulfill its legal obligations to unbundle by merely offering CLECs a resale option.

Also, because it is a service, the Broadband offering is not subject to the protections offered to CLECs under §§ 251 and 252 of the Act for UNEs. SBC has explicitly stated that it will object to any § 251/252 arbitration for terms and conditions of the Broadband Service.[15] However, such arbitrations guarantee CLECs state assistance in establishing and enforcing non-discriminatory just and reasonable rates, terms and conditions for UNEs and interconnection access. Finally, there is nothing to prevent Ameritech from withdrawing or modifying a service at any time. These are valuable and necessary protections that are not available when a CLEC purchases SBC-Ameritech's Broadband Service.

12. Q. IS THE PROJECT PRONTO TECHNOLOGY COMPOSED OF PROPRIETARY EQUIPMENT OR SYSTEMS?

A. No. All of the fiber-fed DLC technology used in Project Pronto is standard, off-the-rack equipment and systems supplied by Alcatel and Lucent. All of this equipment is available for purchase on the open market.

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13 Rhythms Texas Exh. 16A, (002544 to 002555), at Bates 002554.

14 *See* Waiver Order, ¶¶43-44 (if CLECs wish to deviate from SBC's current Broadband Service offering, they must pursue such requests for deployment of any "new features, functions, and capabilities" of advanced services equipment through a collaborative process. There is no guarantee that Ameritech will agree to such requests.)

15 Rhythms Texas Exh. 51 (037159 to 037172), at Bates 037164.

13. Q. DO YOU AGREE WITH MR. BOYER'S THREE GENERAL REASONS WHY SBC-AMERITECH SHOULD NOT BE REQUIRED TO UNBUNDLE PROJECT PRONTO?

A. No. Mr. Boyer first claims that the Project Pronto network architecture can't be unbundled because of the architecture itself. By this, Mr. Boyer is referencing (once again) SBC-Ameritech's assertion that a loop or subloop UNE must occupy a single separate physical path between the customer's premises and the central office. This assertion makes no sense from an engineering standpoint. Moreover, it has already been addressed (and dismissed by the Commission) three times in Illinois. Mr. Boyer's discussion on this point adds nothing new to the record below, and no further response is required.

Mr. Boyer's second claim is that some Project Pronto components constitute packet switching and that SBC-Ameritech therefore does not have to unbundle them. This issue has also been addressed three times in front of the Commission, and I believe Rhythms and the other CLECs have established that all the FCC's requirements for unbundling any portion of Project Pronto that might constitute packet switching have been met. Moreover, my counsel informs me that the packet switching analysis is largely a legal issue. Nevertheless, let me reiterate from an engineer's perspective that the first prong is met, because SBC-Ameritech is clearly deploying digital loop carrier systems, because Project Pronto is based on fiber-fed DLC technology. The second prong is met, because Project Pronto is being deployed in large part to extend the reach of line-shared DSL *beyond* 18,000 feet of total loop length, and 18,000 feet is the maximum all-

copper loop length on which line sharing can be achieved. Thus, even if spare copper loops are available beyond 18,000 feet, they are irrelevant to line sharing. Furthermore, even for loops below 18,000 feet, DSL performance on all copper loops can be inferior to DSL performance on Project Pronto loops, because Project Pronto limits the copper segment distance to 12,000 feet, thereby obtaining higher data throughput rates. In addition, there is a significant risk of throughput degradation for DSL services on all-copper loops after Project Pronto is deployed, because the generation of a strong DSL signal in the field at the RT can create significant levels of cross-talk.

The third prong is met because SBC-Ameritech does not allow Rhythms to place its DSLAM functionality in the RT in the same fashion as does SBC-Ameritech (i.e., by installing ADLU cards in the NGDLC Channel Bank Assemblies). I should point out, as the CLEC parties have before, that collocation of a separate DSLAM at or near the RT is not in any way equal to the use of DSLAM functionality on line cards. As Rhythms and other CLECs have already established, it is simply not economic to install separate DSLAMs because of cost, space, power, right-of-way and other economic and engineering efficiency considerations. The fourth prong is met because SBC-Ameritech clearly has deployed packet switching capability in the loop plant as part of Project Pronto, as evidenced by the OCD in the central office and the packetizing function performed by the ATM side of the NGDLC equipment.

Mr. Boyer's third claim is that Project Pronto need not be unbundled because the "necessary and impair" standard in the Telecommunications Act has not been satisfied. In support of his claim, Mr. Boyer raises the same arguments SBC-Ameritech has raised, and the Commission has rejected, three times before. Therefore, no further general response is required here. I will address this issue in more detail in the context of the claims made by Mr. Boyer for individual UNEs.

14. Q. IN YOUR OPINION, WOULD IT BE A FEASIBLE ALTERNATIVE FOR RHYTHMS TO CONSTRUCT ITS OWN FIBER-FED DLC NETWORK IN LIEU OF USING AMERITECH'S NETWORK?

A. No. Assuming Rhythms had resources to construct, if Rhythms began to build its own fiber-fed DLC network tomorrow, it would start from such a negative market position that it would be impossible to catch up to the ILEC. CLECs have spent significant amounts of time attempting to get access to Project Pronto on full and fair terms, eventually litigating against SBC in every major state of its territory. Meanwhile, SBC has been rapidly expanding its market share by 4,000 new DSL customers per day.[16] SBC's planning documents predict that it will ultimately win a **BEGIN CONFIDENTIAL*** *******END CONFIDENTIAL** market share of the xDSL market after Project Pronto is deployed.[17] Thus, the ability of data CLECs, such as Rhythms, to compete effectively and efficiently in providing advanced services is already substantially impaired.

[16] SBC Investor Briefing, (Oct. 23, 2000), at 4.
[17] Rhythms Texas Exh. 63A, (030629 to 030680), at Bates 030630.

15. Q. WOULD ALL-COPPER LOOPS PROVIDE A PRACTICAL ALTERNATIVE TO PROJECT PRONTO UNES?

A. No. All copper loops would not give CLECs ubiquitous access to a UNE alternative.[18] Without access to Project Pronto, data CLECs cannot provide ubiquitous xDSL services for several reasons. First, the provisioning of xDSL over home run copper is distance sensitive, and generally cannot be supported on copper loops over 18,000 feet. Project Pronto extends the reach of xDSL by connecting copper subloops of no more than 12K feet (from the RT to the customer premises) to fiber subloops between the central office and the RT. The hybrid copper/fiber architecture of Project Pronto makes xDSL available to nearly **BEGIN CONFIDENTIAL*** ********** ***END CONFIDENTIAL** of all SBC customers.[19] If denied access to Project Pronto, data CLECs will only be able to provide xDSL via line sharing to customers located within 18,000 feet of a central office.

Second, a significant percentage of SBC-Ameritech's copper loops have pair gain devices that make the loop unsuitable for xDSL service. For example, Rhythms learned in the Texas Line Sharing Proceeding that **BEGIN CONFIDENTIAL**********END CONFIDENTIAL** percent of SWBT's, (SBC-Ameritech's sister affiliate) copper loops have such pair gain devices.[20] Moreover, the evidence in the Texas case also suggests that the percentage of

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18 47 C.F.R. § 51.317 (b)(2)(iv).
19 Rhythms Texas Exh. 63A (030629 to 030680), at Bates 030630.
20 Rhythms Texas Exh. 10, at 6 (SWBT's narrative response to RFI 1-16(b)).

copper loops unusable for xDSL service will not change after Project Pronto is deployed.[21]

16. Q. WOULD A CLEC'S ABILITY TO COLLOCATE STAND ALONE DSLAM'S IN AMERTITECH'S REMOTE TERMINAL BE A VIABLE ALTERNATIVE TO UNBUNDLING PROJECT PRONTO?

A. No. Collocating stand-alone DSLAMs in the RT is not a feasible option to unbundling Project Pronto UNEs. Physical collocation in a remote terminal may not be an option in many cases because of space constraints in remote terminal locations. For instance, SWBT's deployment documents for Project Pronto demonstrate that there are serious space constraints in Project Pronto RTs. Of the new RTs deployed for Project Pronto, **BEGIN CONFIDENTIAL***** **** *** **END CONFIDENTIAL** percent will be housed in cabinets that will have no space available for collocation of CLEC DSLAMs and other equipment.[22] Thus, after the Project Pronto deployment is complete, it is possible that **BEGIN CONFIDENTIAL***** *********END CONFIDENTIAL** percent of all RTs in Illinois will be housed in cabinets, as they are in SWBT's territory.[23]

17. Q. DO YOU AGREE WITH MR. BOYER THAT LIT FIBER SUBLOOPS CANNOT BE TREATED AS UNES?

A. No. Like Mr. Ransom, Mr. Boyer seizes upon one of the current (and temporary) shortcomings of the Alcatel Litespan equipment: that is, only one PVP per channel bank assembly is currently supported by Alcatel. As I discuss in response

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21 Rhythms Texas Exh. 11 (SWBT's narrative response to RFI 1-17(a)).
22 Rhythms Texas Exh. 55A, at Bates 030183.
23 Rhythms Texas Exh. 55A, at Bates 030183.

to Mr. Ransom's testimony, this is a temporary condition that will soon be remedied. Moreover, if a CLEC wants to purchase a PVP today even with the whole Channel Bank Assembly constraint, the CLEC will have to pay a fully compensatory price for doing so. I think it is unlikely that any CLEC would purchase such a PVP today because of the cost of doing so. But a high price is no reason to declare that a network component is not a UNE. Furthermore, I emphatically disagree with Mr. Boyer's speculation that any CLEC would spend the huge amounts of money required to "lock up" the capacity of one or more Channel Bank Assemblies at a single RT by ordering one or more PVPs to that location. This approach would make absolutely no engineering sense, because the capacity of an entire Channel Bank Assembly would be far more than could conceivably be needed by a single CLEC in the near term, and no CLEC of which I am aware would waste scarce resources in an attempt to "corner the market" in the fashion described by Mr. Boyer. Indeed, only an incumbent LEC would have the financial resources to do so.

I also disagree with Mr. Boyer's assertion that even PVCs should not be provided as UNEs. Mr. Boyer's statement is based on the recycled claim that ATM technology cannot hand off the UNE subloop on a line-by-line basis. Rhythms and other CLECs have already addressed and disposed of this issue three times, so I will not repeat those arguments here.

18. Q. DO YOU AGREE WITH MR. BOYER THAT COPPER SUBLOOP UNES FROM THE RT TO THE NID AND FROM THE RT TO THE SAI ARE NOT TECHNICALLY FEASIBLE?

A. No. There are two ways in which these UNE subloops can be accessed. First, as we have described multiple times, these copper subloops can be accessed by the act of plugging in a CLEC-owned line card in the NGDLC Channel Bank Assembly chassis. The copper subloop terminates on the backplane of the card slots, thus making access to them direct and straightforward.

Second, it is technically feasible to access these subloops with a cross connect field placed at the RT. One or more groups of 25 feeder pairs from each SAI could be terminated on this cross connect field, and then accessed by CLECs wishing to collocate separate pieces of equipment at the RT location. Although this is not the configuration SBC chose to deploy as it deployed Project Pronto, there is no question that it is technically feasible to do so. If I had been asked to design the copper feeder interface to the Project Pronto NGDLC equipment, and I also was told that I would need to create an efficient means of access for CLECs at the RT, I would have viewed this configuration as one viable means to accomplish both goals (and it would have been much cheaper and more efficient to do so if this configuration was put in place during the initial installation rather than on a retrofit basis).

19. Q. IS SBC-AMERITECH'S OFFER TO ALLOW AN ENGINEERING CONTROLLED SPLICE A SUFFICIENT SUBSTITUTE FOR AMERITECH'S UNBUNDLING OBLIGATIONS?

A. No. SBC-Ameritech's attempts to convince the Commission that it is not necessary to unbundled Project Pronto in order for CLECs to have full use of the architecture due to its "voluntary commitment" to construct a so-called Engineering Controlled Splice ("ECS") are misguided. The ECS will purportedly allow CLECs to gain access to the Project Pronto architecture near the RT.[24] However, once the actual terms under which CLECs could order an ECS are examined, it is clear that the ECS is no alternative at all. First, if CLECs must request an ECS as a special construction arrangement, it would be an extremely time-consuming and expensive process. SBC's own documents indicate that it takes 45 business days (or 63 calendar days) from the time a CLEC requests an ECS to that time that the ILEC provides a preliminary analysis in response to the request.[25] Further, the ECS is prohibitively expensive. SBC's documents estimate the average cost of reworking space in an existing RT to be **BEGIN CONFIDENTIAL*** **********END CONFIDENTIAL** per site.[26] SWBT's witness Mark Welch estimated a lower cost of $15,000 to $30,000 per

[24] SWBT Texas Post Hearing Brief, at 84.
[25] Rhythms Texas Exh. 52 (037173 to 037200), at Bates 037198.
[26] Rhythms Texas Exh. 15A, (013538 to 013620), at Bates 013596.

RT.[27] Even at a price of one-third of this estimate, this option would still be prohibitively expensive.

20. Q. DO YOU AGREE WITH MR. BOYER THAT ADLU CARDS SHOULD NOT BE DECLARED TO BE UNES?

A. Mr. Boyer addresses two scenarios: first the ADLU card owned by the CLEC and second, the ADLU card owned by the ILEC. I agree with Mr. Boyer that a CLEC owned ADLU card should not be considered to be a UNE for the simple reason that UNEs are by definition components of the ILEC's network that are owned by the ILEC, not the CLEC.

I disagree, however, with Mr. Boyer on the issue of ILEC owned ADLU cards. Mr. Boyer's chief reason for his position is that an ADLU card, by itself, would be of no use to a CLEC and would need to be combined with other facilities and equipment to be useful. This same argument applies with equal force (or lack of force) to every UNE. For example, a loop by itself is useless unless a carrier connects the loop to switching equipment. A switching UNE by itself is useless unless it is connected to loop and/or transport facilities. In fact, I understand the essence of UNEs to be that they are components of an ILEC's network that can be combined with other UNEs and/or CLECs' own equipment to offer service. Thus, Mr. Boyer's argument makes no sense.

21. Q. DO YOU AGREE WITH MR. BOYER'S OBJECTIONS TO CONSIDERING AN OCD PORT TO BE A UNE?

[27] Texas Hearing Tr. (Welch), at 450-453.

A. No. Mr. Boyer's objections are grounded on a claim that to offer OCD ports as a UNE could use up the capacity of a single OCD. As is the case with the other SBC-Ameritech "capacity constraint" arguments, this argument makes no engineering sense. An OCD is a small piece of equipment that fits in a telecommunications equipment rack of standard width. In fact, it only occupies roughly half the vertical space of such a rack. If the capacity of the first installed OCD is reached, additional OCDs can be easily installed. In fact, SBC-Ameritech's own internal Project Pronto financial planning documents indicate that SBC has already costed out standard configurations of up to **BEGIN HIGHLY CONFIDENTIAL*** ***** ***END HIGHLY CONFIDENTIAL** OCDs per central office.

22. Q. DO YOU AGREE WITH MR. BOYER'S OBJECTIONS TO PROVIDING COMBINATIONS OF UNES?

A. No, although it is difficult to understand the basis for Mr. Boyer's objection because he mounts only the most general opposition to the offering of UNE combinations. It has been well established since 1996 that UNE combinations are to be allowed if technically feasible, and Mr. Boyer has raised no substantive technical points that would preclude this outcome for Project Pronto related UNEs.

III. LINE CARD COLLOCATION

23. Q. DO YOU AGREE WITH MR. BOYER'S ARGUMENT AGAINST ALLOWING CLECS TO COLLOCATE LINE CARDS IN THE NGDLC CHANNEL BANK ASSEMBLY?

A. No. Once again, Mr. Boyer's testimony simply recycles claims that have been advanced by SBC-Ameritech three previous times and rejected each time by the Commission.

24. Q: IS CLEC OWNERSHIP OF LINE CARDS IN THE NGDLC EQUIPMENT TECHNICALLY FEASIBLE?

A. Yes. SBC's internal documents confirm the technical feasibility of CLEC-ownership of line cards in the NGDLC equipment. SBC initially planned **BEGIN CONFIDENTIAL*** **********END CONFIDENTIAL** and had prepared an entire technical document that explained how it would be accomplished.[28] **BEGIN CONFIDENTIAL*** ********** ********** ********** ********** ***END CONFIDENTIAL.** Finally, SBC admits in its own documents that **BEGIN CONFIDENTIAL *** **********END CONFIDENTIAL.**[29]

25. Q: ARE ADLU LINE CARDS PLACED IN THE NGDLC COMPLETE PIECES OF EQUIPMENT ELIGIBLE FOR COLLOCATION, RATHER THAN "PIECE PARTS"?

A: Yes. SBC-Ameritech would have the Commission believe that these ADLU cards are practically useless. However, there is no need for SBC-Ameritech to

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[28] Rhythms Texas Exh. 9A (020699-706), at 020701; Rhythms Texas Exh. 15A (013538-013620), at Bates 013544.

[29] Rhythms Texas Exh. 15A (013538-013620), at Bates 013564.

denigrate the functionality of the line cards. The line cards are functionally equivalent to DSLAMs, and an indispensable component for providing ADSL service through the manufacturer's NGDLC system. Without the line cards, Rhythms would have to collocate other equipment such as a stand-alone DSLAM at the RT. Further, SBC's internal technical documents are consistent with the view that line cards are functionally equivalent to DSLAMs.

SBC's Marketing Service Description for the Broadband UNE states

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26. Q: WILL COLLOCATION OF CLEC LINE CARDS CAUSE PREMATURE EXHAUSTION OF NGDLC EQUIPMENT?

A. No. SBC-Ameritech incorrectly asserts that allowing CLECs to own and collocate line cards will cause poor utilization of slots in the NGDLC equipment. SBC-Ameritech's assertion that CLEC ownership of line cards will result in inefficient use of line card ports, causing premature exhaust of the NGDLC facilities, is purely speculative. Because each line card serves multiple customers, Ameritech-Il argues that CLECs that own line cards will have unused ports, thereby leaving capacity unused and unavailable for customers waiting for service. Such assertions are groundless.

[30] Rhythms Texas Exh. 13A (016178-196), at 4-5 (Bates IP 016181-016182).

Rather, SBC's own affiliate documents disprove SBC-Ameritech's claims. SBC's internal documents show that the highest projected level of demand for xDSL services will require only a fraction of the total capacity of NGDLCs. SBC's Project Pronto Loop Planning Guidelines provides technical and operational instructions to outside plant ("OSP") engineers on the deployment of Project Pronto facilities. In that document, the OSP engineers are told to assume a maximum take rate for ADSL service at **BEGIN CONFIDENTIAL********** ***END CONFIDENTIAL** for residential customers and **BEGIN CONFIDENTIAL*** ********** ***END CONFIDENTIAL** for business customers.[31] Even if residential and business customers both subscribed to xDSL service at the highest estimated rate, only **BEGIN CONFIDENTIAL*** ******* ***END CONFIDENTIAL** percent of the total lines in the NGDLC would be needed for xDSL services.

Each channel bank has 56 slots, and each card can support four line appearances per card, with a total capacity of 672 potential xDSL customers and 2,016 potential POTS customers served from that RT.[32] Even the smallest RT (housed in cabinets) can support an xDSL take rate of 33%, while SBC's highest projection for total take rate for xDSL services is **BEGIN CONFIDENTIAL*** ********** ***END CONFIDENTIAL** and the average take rate projected by SBC and SBC-Ameritech is only **BEGIN**

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31 Rhythms Texas Exh. 57A (000210-289) at 7, (Bates IP 000216).

32 Rhythms Texas Exh. 15A(013538-013620), at Bates 013578; Rhythms Texas Exh. 58A (021060-076) at Bates 021060-076, for Southwestern Bell Telephone Company ("SWBT"), the sister company of SBC-Ameritech in the SBC corporate family.

CONFIDENTIAL********END CONFIDENTIAL.**[33] SBC's own planning documents thus show that even the smallest RTs will have a surplus capacity for xDSL services of **BEGIN CONFIDENTIAL**********END CONFIDENTIAL** percent.

SBC's internal documents demonstrate that SBC-Ameritech is incorrect in speculating that CLEC ownership of line cards will cause port exhaust of NGDLC equipment. The Commission should allow CLECs to own and collocate line cards so that CLECs can choose the type of xDSL service they want to deploy, rather than being limited to SBC's chosen type, namely ADSL. Any SBC "voluntary commitments" to undertake efforts to assure that CLECs can utilize the Project Pronto architecture as fully as possible, do not alter the need for Rhythms' collocation of its owned line cards.

27. Q. SBC-AMERITECH WITNESS RANSOM CLAIMS THAT THE COMMISSION'S ORDER COULD THREATEN THE ABILITY OF MANUFACTURERS OF NGDLC EQUIPMENT TO COMPETE ON THE MERITS OF THEIR TECHNOLOGY BY REQURING "STANDARDIZATION" OF EQUIPMENT. DO YOU AGREE?

A. No. After reviewing his testimony, it appears to me that Dr. Ransom's conclusion is based on a false premise.

28. Q. PLEASE EXPLAIN.

A. Dr. Ransom's testimony on this issue addresses the Commission's order that CLECs, in addition to SBC-Ameritech, be allowed to own the NGDLC line cards to be used for enabling line sharing on Alcatel's and other manufacturers'

[33] Rhythms Texas Exh. 12A (000211-289), at 7 (Bates IP 000216).

NGDLC equipment at the RT. In listing numerous reasons why he believes the Commission's order is infeasible to implement, however, it seems clear that Dr. Ransom believes that the Commission was ordering SBC-Ameritech to allow line cards designed for other systems to be inserted into Alcatel's Litespan NGDLC system. For example, on page three of his testimony, Dr. Ransom lists physical incompatibility of the cards, software incompatibility and numerous other related issues.

Although I cannot read the Commission's mind, I can see no basis for Dr. Ransom's premise that the Commission was ordering SBC-Ameritech to allow the immediate placement of any manufacturers' line cards in Alcatel's Litespan NGDLC equipment. Rhythms and other CLECs in the case below were not seeking this outcome. Instead, the CLECs asked the Commission to allow them to own and place compatible (i.e., manufactured or licensed by Alcatel) NGDLC line cards in Litespan NGDLCs. I believe this is what the Commission ordered. Thus, none of problems put forth by Dr. Ransom is applicable to the result ordered by the Commission.

In the long term, it also is possible that the equipment industry might move to interoperability for NGDLC components like line cards. That is, the industry by agreement could standardize the physical attributes and software attributes of line cards so that any manufacturer could build a line card that would fit into any other manufacturer's NGDLC card slot and would work properly. If and when that happens, the problems identified by Dr. Ransom would still be

inapplicable. Although Rhythms would welcome such a development, we were not and are not seeking to have the Commission impose an outcome that is not currently technically feasible. Thus, Rhythms' position is, and has been, that Rhythms and other CLECs should be able to own and install any NGDLC line card that is either manufactured or licensed by Alcatel.

29. Q. IS THE MANUFACTURE OF LINE CARDS SO DIFFICULT THAT ONLY ALCATEL CAN PRODUCE LINE CARDS THAT WILL WORK IN ITS NGDLC?

A. Certainly not. While Alcatel obviously has the ability to manufacture line cards for its NGDLC systems, other manufacturers are equally able to do so. Indeed, Alcatel has already licensed both ADC and Adtran to manufacture line cards for its Litespan NGDLC. I am attaching as Attachment DW-1 an Alcatel press release dated March 27, 2001 announcing this licensing arrangement.

30. Q. DOES THIS LICENSING ARRANGMENT APPEAR TO BE A ONE-TIME EVENT?

A. No. The Alcatel press release references a pre-existing arrangement called the "Alcatel Access Partners Program," through which Alcatel licenses manufacturers to produce products that interoperate with Alcatel equipment. Further, given recent events, it seems likely that Alcatel will soon have to rely on other manufacturers to produce line cards for its NGDLC equipment.

31. Q. WHAT RECENT EVENTS ARE YOU REFERENCING?

A. Alcatel's Chairman and Chief Executive Serge Tchuruk announced on June 27, 2001 that Alcatel will sell the vast majority of its manufacturing plants by the end

of 2002. Out of the 120 factories Alcatel currently owns, it will retain less than a dozen after the shutdowns. Mr. Tchuruk was quoted as saying "we are going to be a fab-less company pretty soon." This policy is already being implemented, as evidenced by the June 25, 2001 announcement by Sanmina Corporation that it has signed a letter of intent to acquire Alcatel's manufacturing operations in Richardson, Texas. Although I cannot be certain that Alcatel plans to outsource the manufacturing of all of its line cards, the important principle here is that Alcatel itself believes that it can continue to maintain the features, functions and quality of its equipment while still having components manufactured by third parties. I am attaching as Attachment DW-2, copies of news stories and press releases concerning Alcatel's planned sales of its manufacturing plants.

32. Q. DOES DR. RANSOM ASSERT ANY OTHER PROBLEMS ASSOCIATED WITH CLEC OWNERSHIP OF NGDLC LINE CARDS?

A. Yes. Dr. Ransom points out that for each line card, all of the subloops supported by the card are cabled to a single serving area interface ("SAI"). Dr. Ransom asserts that CLEC ownership is inefficient because unassigned lines on one CLEC's line card cannot be used by other carriers. Dr. Ransom's argument is unpersuasive for several reasons.

First, any so-called "stranded" capacity that may occur is less of a problem than SBC-Ameritech would have the Commission believe. Each port on line card in a Channel Bank Assembly is fully utilized before the next card is assigned. Thus, it is only the last card installed in a channel bank assembly that can be less

than 100 percent utilized when first installed. Second, even if CLEC-owned cards have some unused capacity, this is not a new issue for ILECs. It is a normal business practice for ILECs to deploy cards for themselves that are not fully utilized. I know of numerous examples. For instance, ILECs use four-port line cards to support payphones. Once deployed, the ILEC will not break up the ports on that line card to support other types of service. Thus, if in a particular circumstance, only one port is needed to support pay phone traffic, the other three ports on the card are unused. Similarly, ILECs must deploy a system card in Litespan channel banks in any RT from which a customer desires PBX service. Each such card can support ring generation for all of the line cards installed in the entire Channel Bank Assembly. Such cards are never deployed individually – they are always deployed with a redundant backup. Thus, if an ILEC has an RT in which only one customer desires PBX service, the ILEC will deploy two system cards in common control slots. If the PBX customer later disconnects, standard practice calls for the two common ringing generation cards to remain in place, still occupying NGDLC "real estate" even though there is no customer using the capabilities of the cards.

Second, the task of matching the capacity of equipment (often referred to as real estate) with bandwidth capacity is a administrative issue, not a technical issue. ILECs must manage capacity issues for their own operations, and should do so for CLEC-owned cards. The ILECs should not be allowed to use such administrative issues to deny CLECs the right to collocate line cards in the Project

Pronto NGDLC. Finally, SBC-Ameritech raised the same "stranded capacity" claim in the case below, and the Commission has already rejected those arguments and SBC-Ameritech has presented no new evidence on this issue.

33. Q. DR. RANSOM ASSERTS THAT ADLU CARDS CANNOT BE USED FOR ACCESS TO UNES OR INTERCONNECTION. DO YOU AGREE?

No. Dr. Ransom points out that there are no "physical points of access on the cards."[34] This observation misses the point. Rhythms has never suggested that it wanted to obtain physical points of access on the line cards. Rather, Rhythms proposed, and the Commission agreed, that the line cards were the means by which CLECs could access both the copper subloop running from the RT to the customer premises and the fiber subloop running from the RT to the central office handoff of the subloop. This simultaneous access of two subloops is accomplished simply by plugging the CLEC line card into the NGDLC slot.

IV. ATM FUNCTIONALITY: QUALITY OF SERVICE CLASSES

34. Q. IS IT TECHNICALLY FEASIBLE TO DEPLOY DIFFERENT ATM QUALITY OF SERVICE ("QOS") CLASSES VIA LINE SHARING OVER PROJECT PRONTO?

A. Yes. The number of QoS classes that can be enabled on a particular ATM network link is a function of the number of QoS classes supported by the equipment manufacturer. In the case of Litespan NGDLC, Alcatel initially supported only the Unspecified Bit Rate ("UBR") QoS class. Recently, Alcatel began supporting the Constant Bit Rate ("CBR") QoS class, and SBC-Ameritech

[34] Ransom Direct, at 4.

has announced that it will begin to support CBR-based Permanent Virtual Circuits ("PVCs") of relatively small size on its Litespan platform.

There are other ATM QoS classes in addition to UBR and CBR that have been standardized by industry agreement for a number of years. These include Variable Bit Rate-real time ("VBR-rt"), Variable Bit Rate-non real time ("VBR-nrt"), and Available Bit Rate ("ABR"). It is the routine practice of ATM equipment manufacturers to support all QoS classes in their products. Thus, Alcatel's Litespan equipment actually has not caught up with standard industry practice, because of its support of only a limited number of QoS classes.

35. Q. WOULD YOU EXPECT THAT ALCATEL WILL NOW STOP PRODUCT DEVELOPMENT ON ITS LITESPAN NGDLC?

A. I would not expect Alcatel to do so. Instead, I would expect Alcatel to catch up with the rest of the ATM equipment manufacturing industry as soon as possible by offering all five QoS classes as soon as that capability can be developed and deployed in its Litespan NGDLC equipment.

36. Q. IS RHYTHMS ASKING TO OBTAIN QOS CLASSES THAT ARE NOT CURRENTLY DEPLOYED IN SBC-AMERITECH'S NGDLC EQUIPMENT?

A. No. Although Rhythms will urge both Alcatel and SBC-Ameritech to develop and deploy full ATM functionality as soon as possible, Rhythms and other CLECs will have to wait for that deployment before requesting such full functionality.

V. ATM FUNCTIONALITY: PVPS AND PVCS

37. Q. PLEASE DESCRIBE THE TERMS PVP AND PVC.

A. As the parties have demonstrated in the case below, Permanent Virtual Circuits ("PVCs") are the logical paths between two ATM devices (such as the OCD and the NGDLC) that carry a single customer's ATM cell traffic. Permanent Virtual Paths ("PVPs") are simply a larger logical path between two ATM devices that contains a number of PVCs. I am attaching a graphic representation of this relationship to my testimony as Attachment DW-3.

It is important to note that both PVPs and PVCs are available and have been available as standard offerings for years in all ATM networks of which I am aware. Carriers use PVPs so that they can individually manage PVCs for their end users and can therefore offer different levels of service and differentiate their products. It is unfortunate that Alcatel's Litespan NGDLC product cannot currently offer standard PVP functionality, as I discuss in more detail below.

38. Q DR. RANSOM CLAIMS THAT THE LITESPAN SYSTEM CANNOT SUPPORT THE COMMISSION'S ORDER THAT CLECS BE GIVEN PVPS BETWEEN THE RT AND THE OCD. IS HE CORRECT?

A. Only in the most technical and temporary sense. The Litespan equipment *currently* is only able to support a single PVP to each Channel Bank Assembly. However, as I'm sure Dr. Ransom is aware as Alcatel's Chief Technology Officer, Alcatel will soon be able to support multiple PVPs per Channel Bank Assembly. This added functionality is to be included in software Release 11. which is actually overdue at this time. This fact was confirmed by the Alcatel

representatives who attended a three-day line sharing technical workshop hosted by the California Public Utilities Commission (which I attended). Thus, Alcatel is clearly working hard to improve the Litespan's feature set to catch up with the rest of the industry.

39. Q. WILL RHYTHMS REQUEST PVPS PRIOR TO THE DEPLOYMENT OF SOFTWARE RELEASE 11?

A. It is highly unlikely. As Ms. Murray points out in her direct testimony, the Commission will need to set TELRIC-compliant prices for all UNEs. Given the severe current inflexibility of the Litespan design, In most cases, the implied cost of requesting a PVP would likely be uneconomic for Rhythms . If Rhythms were to request a PVP prior to the deployment of software Release 11, it would of course expect to pay the TELRIC-compliant price for doing so. However, this scenario itself is highly unlikely because of the imminent completion of software Release 11. Beginning with Release 11, Alcatel is moving to offer multiple PVPs to carriers, in line with the current status quo with the rest of the ATM industry.

40. Q. DOES THIS CONCLUDE YOUR TESTIMONY AT THIS TIME?

A. Yes. However, I reserve the right to supplement my testimony should relevant information become available.